

281-34
DRAWING NUMBER
A-105
Control
M-3

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HVAC SPECIFICATIONS

REQUIREMENTS

All mechanical work shall be free from defects in workmanship and materials for a period of one (1) year from date of final acceptance and shall meet all local and state codes. All defects, which develop or are discovered within this period shall be repaired by the Contractor to the satisfaction of the Engineer and at no additional cost.

GENERAL

- The Contractor shall examine the site of the proposed work to determine the existing conditions that may effect his work.
- It is the intention of the Contract Drawings and Specifications to call for finished work, tested and ready for operation. All materials shall be new and of first-quality.
- All material, work, incidental accessories or other details not shown but necessary to make the work complete and perfect, and in all respects ready for operation, even if not particularly specified, shall be provided by the Contractor at no additional cost.
- The Contract Drawings are generally diagrammatic and are intended to convey the scope of work and indicate general arrangement of ductwork, pouches, and induction units. Existing ducts, pipes, utilities, etc. that are damaged during the construction period, whether or not due to the Contractor's negligence, shall be repaired or replaced by the Contractor and left in a condition satisfactory to the Engineer.
- Coordinate locations of all pouches with architectural reflected ceiling plans.
- The space around pipes, ducts, etc. penetrating rated walls, shall not exceed 1/2" and shall be packed solid with Thermafiber, Mineral Wool or equivalent non combustible material. Perimeter shall be closed off by tight fitting metal escutcheons on both sides of this construction as required by Sections C26-S04.5 (b) of N.Y.C. Building Code.

MATERIALS TO BE RETURNED TO THE AUTHORITY

- The Contractor shall deliver all excess material as shown below to a designated area in the W.T.C. complex as directed by the Engineer.
 - Light fixture air pouches

MATERIALS PURCHASED FROM THE AUTHORITY

The Contractor shall purchase the following materials from the Authority as required for the installation.

- Light fixture air pouches
- Round flexible duct for air connection to pouch

DUCTWORK

- All ductwork shall be furnished, installed and fabricated in accordance with the latest edition of the SMACNA Low and High Velocity Duct Construction Standards Manual, using prime sheets of galvanized steel. All square elbows shall be provided with turning vanes on maximum 4" centers. Provide access doors at all fire and automatic dampers for access.
- All branches and take-offs shall be equipped with volume controllers.
- All finger ducts and flexible connectors shall be 7" diameter unless otherwise indicated on drawing.
- Support horizontal ducts with hangers secured to structural steel above at intervals not exceeding 6'0". Install additional steel as required.
- Flexible connectors to the supply duct and the diffuser plenum of ceiling pouches shall be sealed with 3M Co. 600 sealant and clamped with Stainless Steel Ideal Type S2 clamps.
- All access doors shall be as per latest SMACNA Standards.
- Remove existing 4" round flexible duct connection that penetrates the 2 hr. rated closure panel within the induction unit cover. Install new 4", 26 gauge galvanized steel circular duct, seal all joints with 3M Co. 600 sealant and stainless steel adjustable type clamps. A maximum length of 4'-0" of flexible ductwork shall be used for connection to the induction units.

FLEXIBLE DUCT CONNECTORS

Flexible duct connectors for pouches shall conform to the requirements for Class 2 Air Duct Connectors when tested in accordance with UL 181, "Standard for Factory-Made Air Duct Materials and Air Duct Connectors." Flexible duct connectors shall be 7" diameter and shall not exceed 3 feet in length.

CEILING REGISTERS, GRILLES & DIFFUSERS

Model numbers specified are manufactured by Anemostat or an approved equal. All finishes shall be baked white enamel.

- Registers (Return): shall be Model S3HDD
- Grilles (Return): shall be Model S3HD
- Diffusers (Supply): shall be Model DF with No. 41 core pattern (4-way) shall be Model DF with No. 31 core pattern (3-way)
- Damper: Damper for diffusers shall be Model DDB.

WATER-COOLING AIR-CONDITIONING UNITS (NEA NO. 129-81-E)

- Furnish and install packaged air conditioning units. Units shall be complete with temperature control, compressor, evaporator coil, condenser water regulating valve and other system components required to provide proper air conditioning for the space designated on the Contract Drawings. Filter shall be Class 1, UL listed; 45% efficiency.
- AC Units shall be furnished with the following accessories:
 - Condensate Pump in ceiling
 - Disconnect Switch in ceiling
 - Wall Mounted Control Box with thermostat
 - Ducted as shown on plans.

3. Schedule		Blower		Total Cooling		Auxiliary		Cooling Water		Model		Total	
Unit	No.	CFM	H.P.	Ext.	S.P.	Cap. (Btu)	DR	GPM	F.E.W.T.	No.	W(Net)	No.	W(Net)
AC-9	1000	1/4	0.3"			30000	60	8.0	6PM	804-031	300"		
AC-10	1250	1/2				35600	67	9.4	6PM	804-037	350"		
AC-11													

AC Units motor shall be 1 phase and for 208 volts.

- The Units shall be factory run, tested and rated in accordance with ARI Standards.
- AC Units shall be complete with water regulating valve. Valve shall be rated for 150 psi. working pressure.
- Units shall be similar or equal to Friedrich and rated at 150 lbs. working pressure. Units shall be cooling only models.

PIPING AND ACCESSORIES

A. TEST REQUIREMENTS (Aux. Cooling Water)

Operating Pressure	150 PSIG
Operating Temperature	65 Deg. F - 95 Deg. F
Hydrostatic Test Pressure	1.5 x Operating Pressure
Duration of Test	2 hours

Isolate equipment, controls, instruments and valves from the piping system during hydrostatic tests

B. Piping & Fittings

System	Pipe	Fittings
Aux. Cooling Water	Black Steel Pipe, Conforming to ASTM A-53 Schedule 40 Grade B, Black Seamless	2-1/2" cast iron screwed 250 lb. class
A.C. Unit Condensate Drain	Copper ASTM B-88 Hard Temper Type (L)	Wrought Copper Solder Joint 5 ANSI B16.18

Vent auxiliary cooling water piping at all high points.

C. Accessories

- Unions for auxiliary cooling water service shall be similar and equal to 250 lb. class, malleable iron with bronze seats, Grinnell Figure 554, U.L.
- Nipples 6" length or less, shall be extra heavy and the material shall be the same as the pipe. Close nipples shall not be used.
- Braided type flexible connector shall be Vibration Mounting and Control Inc., (VICO) Model MFP Style NE Max. 280 psig or approved equal.

D. Soldered Joints

95-5 Tin-Antimony Solder having a melting point greater than 450 F. Excess solder shall be removed while still in the molten state with a fillet left at the face of the fitting.

E. Thermometers

- Thermometers for piping shall be of the "all angle" (universal), separate socket, industrial type with #304 stainless steel extension neck walls.
- The thermometer for auxiliary cooling shall operate at 0 - 150 Deg. F range and shall include a sufficient safety margin at either end.
- Thermometers shall be as manufactured by Albert A. Weiss, Weksler Instrument Co., Ashcroft or approved equal.

F. Pressure Gauges

- Pressure gauges shall be of the bourdon tube spring type with 4-1/2" dial sizes. Gauges shall have black aluminum cases with black numbers on white background. The gauges shall be as manufactured by Albert A. Weiss, Weksler Instrument Co. Ashcroft or approved equal.
- The pressure range for the auxiliary cooling, shall be 0 - 250 psi. and the Bourdon tube shall be Bronze.

G. Strainers

Strainers shall be similar and equal to those manufactured by Muller Steam Specialty Co. Screwed "Y" strainers for pipes 2-1/2" and smaller shall be 250 lb. No. 11 The screens for the strainers shall be stainless steel. Strainers shall be provided with capped blowdown valves.

H. Sleeves and Escutcheons

Exposed piping passing through walls shall be fitted with chromium plated cast brass escutcheons with fastening set screws similar and equal to Fee & Mason Manufacturing Co., F & S Manufacturing Co. or Ritter Pattern and Casting Co.

I. Pipe Supports and Hangers

- All supports and parts shall conform to the latest requirements of the ANSI Code for pressure piping B31.10 and MSS standard practice SP-58.

- Hangers shall be manufactured by Grinnell, Blawnox Co. or an approved equal.
- Pipe hangers, rods, inserts and clamps shall be of the type and size specified in the respective uses by the Underwriters' Laboratories.
- Unless otherwise specifically approved.

Pipe Sizes	Max Hanger Spacing
1/2" to 1"	9 ft. o.c.
1-1/2" to 2-1/2"	9 ft. o.c.

J. Valves

Type	Size	Pressure	Jenkins Fig. No.
Gate	Up to 2"	125 psi.	47U
Gate	Up to 2"	150 psi.	49U
Gate	Up to 2"	300 psi.	280U

- Balancing valves shall be non-lubricated with adjustable stop valve shall be rated for 150 psi. W.O.G. Valves shall be as manufactured by the Underwriters' Laboratories or approved equal.

K. Pipe and Valve Identification

- Provide and affix a set of approved identification tags to the piping system and direction of flow.
- Each set shall consist of one band on each pipe and one tag printed in letters not less than 1 inch high.
- Bands shall be in colors as indicated by Standard A-13.1.

System	Background
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Auxiliary Cooled Water Green

Adhesive bands shall be W.H. Brady Company or approved equal.

L. Threaded Joints

Steel pipe threaded joints shall be made with joint compound or tape, placed on the male threads.

INSULATION FOR CONDENSATE DRAIN PIPING

Insulation: 1/2" thick one piece fiberglass insulation with a minimum R-value of 25, smoke rating "50". (Insulation shall be applied to all exposed piping.)

Auxiliary Drain Pan Requirements

- Make drain pan 12" larger than AC unit and 1/2" with 1/2" hem turned down and made from 16 ga. galvanized steel.
- Water alarms shall be "Water Alert" Model 1000 or approved equal. Locate alarms so that they can be reached from the area.
- Place a durable metal sign permanently on the unit and to read "When Alarm sounds call 466-4164 weekends".

CUTTING AND PATCHING

- Piping passing through walls shall have the opening patched as necessary for the installation of the piping. The patch shall be 1/2" in diameter larger than the piping and shall be required insulation passing through the wall with the finished wall surface.
- Piping passing through concrete floors shall be 1/2" in diameter larger than the outside of the piping and shall be required insulation passing through the floor with the finished floor surface.
- Annular spaces between piping and structural members shall be packed with thermal insulation to the integrity of the walls and floors with the piping and equal to Uniseal or Duxseal as manufactured by the Underwriters' Laboratories.

EXECUTION

- All work in occupied tenant areas shall be done during normal working hours as directed by the Engineer.
- The Contractor shall notify the Engineer of any systems becomes necessary. Shut-down of systems shall be coordinated with the Engineer.

BALANCING

The Contractor shall provide the service of a balancing specialist who specializes in air conditioning systems. Perform all balancing work in coordination with the Contractor.

SUBMITTALS

Submit for approval three (3) sets of shop drawings. Submit three (3) sets of catalog cuts for grilles, ceiling diffusers, ceiling registers, and ceiling diffusers. Submit three (3) copies of air balancing data.